

The cercopods are distinctive. In both sexes the cercopods are heavily and regularly setiferous to the end. The cercopods are relatively short and lobiform and only slightly pointed (Fig. 5).

The penes possess a short, median process near the base. Terminally the penis has a short, heavy spine. The vas deferens has the characteristic dorsal loop without a seminal vesicle. The linguiform basal outgrowths mentioned by Linder (1941) are not present.

The maximum size observed for these animals is 11.0 mm in length. The average length for males is 9.9 mm and for females 9.0 mm. Specimens hatched in the laboratory from dried mud taken from a dried pool lived for 45 days and did not develop above average size.

Remarks.—*Streptocephalus antillensis* differs from the other western hemisphere species of the genus in many respects. Mackin (1942) indicates that the North American species prefer pools with abundant vegetation, while this species has been found in limestone pools devoid of vegetation except for some algae. In size this species is smaller than the other North American species: *S. sealii* Ryder up to 36.2 mm; *S. similis* Baird up to 15.5 mm, *S. texanus* Packard up to 29 mm, and *S. dorotheae* Mackin up to 18 mm in length.

Through the courtesy of the U. S. National Museum I have examined specimens of *S. sealii* (U.S.N.M. No. 180642), *S. texanus* (U.S.N.M. No. 154820), and metatypes of *S. dorotheae* (U.S. N.M. No. 79047). *S. antillensis* is easily separated from the species *S. sealii* and *S. similis* by the caudal furcae or cercopods, as in those two species the cercopods have heavy, curved spines distally instead of being setiferous to the end. Also *S. similis* has three processes on the anterior margin of the inner shorter branch of the male clasping antennae instead of the two processes of *S. antillensis*. *S. similis* has been recorded nearer, geographically, than any other species of the

genus having been taken from Jamaica and the Dominican Republic. There seems to be a closer relationship between *S. texanus*, *S. dorotheae* and *S. antillensis* than with the other two American species; the cercopods are similar, and the processes on the external branch of the clasping antennae are similar. However, the spinous and very elongated external branch of the "hand" and the "bird's head" termination of the basal spur are very distinctive, as are the shorter "elbow" section and general elongated proportions of this part. The more lobelike cercopods of *S. antillensis* also separate it from *S. texanus* and *S. dorotheae* where the cercopods are more elongated and pointed. The presence of the spines on the elongated outer branch of the clasping antennae separates this species from all others of the genus except *S. dichotomus* Baird from India, *S. papillatus* Sars from Africa, and the varieties of *S. torvicornis* from Hungary, Egypt, and Morocco discussed by Daday (1910). These latter species are so distinctive in many respects that there is no chance of confusion with *S. antillensis*. The coalescence of the basal portions of the second antennae also seems to be a diagnostic character for this species.

Type locality.—Mona Island, Puerto Rico.

Types.—Holotype, male, U.S.N.M. no. 91085, and paratypes, both sexes, U.S.N.M. no. 91086, in the U. S. National Museum and in the writer's collection.

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ORNITHOLOGY.—*The identity of the American vulture described as Cathartes burrovianus by Cassin.*¹ ALEXANDER WETMORE, Smithsonian Institution.

In the year 1845 on March 25 John Cassin presented before the Academy of Natural Sciences of Philadelphia the description of a species of American vulture based on a specimen forwarded from México by Dr. Marmaduke Burrough

(then recently deceased), who had served as United States consul at the Gulf coast port of Vera Cruz. This bird, which Cassin believed to be new to science because of its small size and certain color and structural characters, he named *Cath-*

¹ Received October 24, 1950.

artes burrovianus,² in honor of the collector "as a slight acknowledgment for his very valuable services to Natural History and to this Academy." The identity of this specimen remained uncertain for a good many years. Bowdler Sharpe³ noted its resemblance to the species known in his day as *Cathartes* (or *Oenops*) *urubitinga* but was assured by Elliot and P. L. Sclater, who had seen the type in Philadelphia, that it was nothing but a small specimen of the common *Cathartes aura*. At the same time Sharpe gave the name *Oenops pernigra*⁴ to a vulture from Brazil that he described as "entirely black, with purplish reflections . . . head yellow." Ridgway⁵ considered *C. burrovianus*, which he called Burroughs's turkey vulture, the valid name for the yellow-headed species called currently *Cathartes urubitinga* Pelzeln,⁶ supposedly a South American form, but from this conclusion given a range extending from Brazil to Veracruz, and questionably to Guanajuato (from data supplied by Professor Dugés). Sharpe⁷ followed Ridgway's treatment of *burrovianus*, adding Guiana to the stated range, and included also as another species his *Cathartes perniger* (Sharpe) from "Guiana, Amazonia, Peru." Finally Nelson,⁸ in a study of the North American turkey vultures, examined Cassin's type of *burrovianus* and concluded that it was a specimen of *Cathartes aura* Linnaeus, the type locality of which he designated as the state of Veracruz, a treatment of *burrovianus* that has been currently followed to the present time. There has been mention of these matters by other authors, but the above résumé covers the references pertinent to the present discussion.

² *Cathartes Burrovianus* Cassin, Proc. Acad. Nat. Sci. Philadelphia 2: 212. 1845 (near Vera Cruz, Veracruz, México).

³ Cat. Birds Brit. Mus. 1: 28, 1874.

⁴ *Oenops pernigra* Sharpe, Cat. Birds Brit. Mus. 1: 26. 1874 ("north" = south side of the Rio Amazon, Brazil).

⁵ Proc. U. S. Nat. Mus. 8: 34-35. 1885; Man. North Amer. Birds: 221. 1887.

⁶ *Cathartes urubitinga* Pelzeln, Sitzb. math.-naturw. Kl. Akad. Wiss. Wien 44: 7. 1861. (Fortin do Rio Branco, Amazonas, Brazil).

⁷ Hand-list Gen. Spec. Birds 1: 240-241. 1899.

⁸ Proc. Biol. Soc. Washington 18: 124. Apr. 18, 1905.

For a good many years it has been apparent to me that the identification of the forms of turkey vultures from museum specimens is beset with many uncertainties. This impressed me particularly when I found that the skins of the yellow-headed species that I collected in northern Argentina and Paraguay in drying lost the distinctive head color so completely that it took close scrutiny to separate them from the red-headed forms. Further, there were difficulties in distinguishing the subspecies of *Cathartes aura*. Because of this I have given these birds special attention whenever possible, especially during work in the field in Central America and in northern South America.

In the dry season of 1948, with Watson M. Perrygo of the U. S. National Museum as assistant, I was in the field on the eastern side of the Azuero Peninsula on the Pacific coast of western Panamá, where we made as complete a collection of birds as time permitted. On March 17 we visited the Ciénaga Macana, near the small settlement of El Rincón in the northern section of the province of Herrera. While I waded waist deep in the lake for masked ducks, Perrygo devoted his attention to other species along the shore, at the same time watching to see that I did not get into trouble in the deep and sticky mud. Presently he shot three turkey vultures from birds that were circling overhead. I had noted from a distance that they appeared quite small and had supposed that they would be typical *aura*. It was a great surprise to find that the male, female, and immature male taken had the curious pattern of dull blue, dull green, and dull yellow on the head that marked them as the South American species, the yellow-headed vulture. We returned immediately to our quarters in Parita, where Richard Stewart, staff photographer of the National Geographic Society, another member of our party, recorded the head colors of our birds in kodachrome within an hour of their death.

These specimens led me to continue an intensive examination of skins of the genus in American museums, where to date I have seen nearly 400 specimens in our leading collections. At the Academy of Natural Sciences of Philadelphia one problem was

solved when Rodolphe de Schauensee placed in my hands Cassin's type of *Cathartes burrovianus*, since it was evident at a glance that this was the same as the birds taken in western Panamá. It is planned eventually to summarize the growing amount of data on these birds assembled from museum material in a synopsis of all the forms of the genus. It seems desirable, however, to record the presence of the yellow-headed turkey vulture definitely in Central America and México that others may be warned to be on the lookout for it.

The common name "yellow-headed" is valid for the bird in life, since when seen clearly in flight the head appears distinctly yellow, in contrast to the definitely red head of *Cathartes aura*. In the hand, however, other colors are evident. From an adult male that I shot at Las Palmas, Chaco, in northern Argentina on July 20, 1920, I wrote the following description from the freshly killed bird⁹:

The bill was cream buff, shading to vinaceous buff on a broad area that extended onto the forehead, behind the nostrils; side of the head in general, including eyelids, deep chrome; center of crown dark Tyrian blue, bordered on either side by a broad band of stone green; skin of throat posteriorly deep chrome, becoming paler forward, to shade into olive buff toward base of bill; space between mandibular rami spotted with dark Tyrian blue; a dull spot of slate blue beneath the nostrils on either side; iris carmine; tarsus cartridge buff, shading to neutral gray on the toes, where the interscutal spaces have a scurfy whitish appearance.

From the most brilliantly colored of the three taken at El Rincón, Herrera, Panamá, in 1948, a female, I made the following notes in life: Cere, forepart of crown to center of eyes, nape, back of head, and throat dull orange-red; center of crown dull bluish gray; sides of head from posterior loreal space through eye and ear, including the area down to below the gape, bright orange; lores greenish yellow; spot in front of and slightly above eye dull bluish gray; sides and front of neck, including the area covered by papillae dull yellowish orange; iris red. The other two

taken at the same time were somewhat duller.

Foster Smith has furnished a sketch with a female shot at Cantaura, Anzoátegui, Venezuela, October 10, 1948, with colors marked as follows: Band across cere, extending down across base of mandible and back over forehead to level of eye, red; an irregular area on side of head covering auricular area and extending forward below eye dull dark orange; throat, foreneck, and sides of head in front of and above eye light blue with a greenish cast: posterior part of crown rather dark blue-gray; band across hindneck extending down posterior part of sides of neck light orange; iris dull red.

A sketch made by George K. Cherrie, of a female taken at Caicara, Bolívar, Venezuela, August 9, 1898, and preserved with the skin, catalogue no. 469920 in the American Museum of Natural History, gives the following data: Base of bill, throat, and upper foreneck dusky lavender-purple; cere and forehead pale creamy buff; space below eye ochre-yellow; posterior part of crown verditer blue; hindneck and sides of neck dusky orange-ochraceous.

In addition to the color of the head *Cathartes burrovianus* is marked by small but well-developed caruncles on the sides of the neck and at the base of the head. These are most evident in the adult but are slightly developed in immature individuals. The yellow-headed bird also is blacker, with few or no brownish edgings on the wing coverts. Northern specimens are small with tendency to increase in size from Brazil to northern Argentina. It is evident that two geographic races will be recognized when full information is available.

It is clear that the name for the yellow-headed turkey vulture becomes *Cathartes burrovianus* Cassin dating from 1845, with *Cathartes urubutinga* Pelzeln, 1861, and *Oenops pernigra* Sharpe, 1874, as synonyms. Should a southern subspecies be recognized it is probable that one or both of the two latter names may cover it. This may be determined certainly when further data are available.

⁹ Wetmore, U. S. Nat. Mus. Bull. 133: 87. 1926.